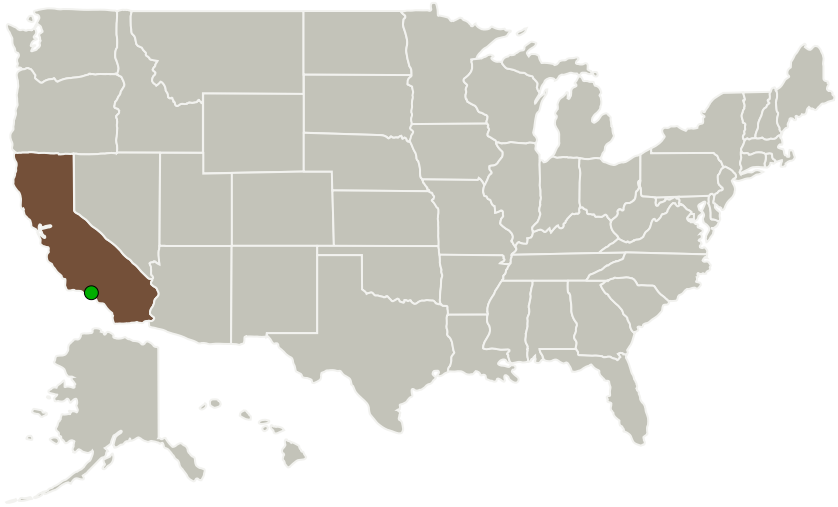
3D Flash LIDAR EDL Resolution Improvement, Phase II

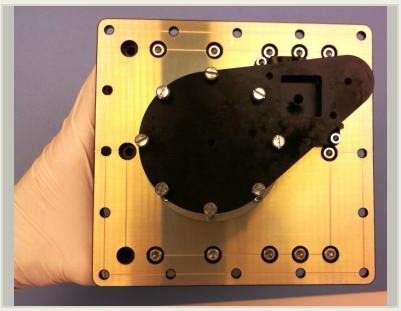
Completed Technology Project (2014 - 2017)

Project Introduction

Advanced Scientific Concepts, Inc. (ASC) is a small business that has developed 3D Flash LIDAR systems for space and terrestrial applications. 3D Flash LIDAR is ideal for determining real-time spacecraft trajectory, speed and orientation to the planet's surface, as well as evaluating potential landing sites. ASC's Flash LIDAR has been used for autonomous berthing with the International Space Station (ISS) and is currently under development for the OSIRIS-REx asteroid rendezvous mission. Flash LIDAR is also being evaluated by JPL and NASA for Entry Decent and Landing (EDL) for ALHAT and Mars. Through the investigations at JPL and NASA Langley a number of improvements to the technology have been identified as beneficial to landing application. Improved range resolution, spatial resolution, increased sensitivity and greater dynamic range would increase the functionality for successful landing operations. ASC has developed the core technology for Flash LIDAR with its 3D-FPA and is developing higher resolution arrays to address these concerns. ASC currently has on hand high sensitivity 32x32 arrays (shuttle run for the 320x320) that have not been tested with detectors. Initial evaluation suggests that they have increased sensitivity by 50x, spatial resolution by 2.5x, and range resolution by 3x.

Primary U.S. Work Locations and Key Partners





3D Flash LIDAR EDL Resolution Improvement, Phase II

Table of Contents

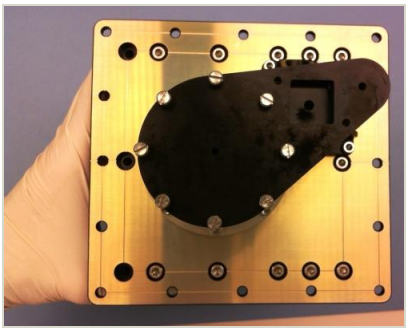
3D Flash LIDAR EDL Resolution Improvement, Phase II

Completed Technology Project (2014 - 2017)

Organizations Performing Work	Role	Type	Location
Advanced Scientific Concepts, Inc.	Lead Organization	Industry	Goleta, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California

Images



Briefing Chart Image
3D Flash LIDAR EDL Resolution Improvement, Phase II
(https://techport.nasa.gov/image/127242)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Advanced Scientific Concepts, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

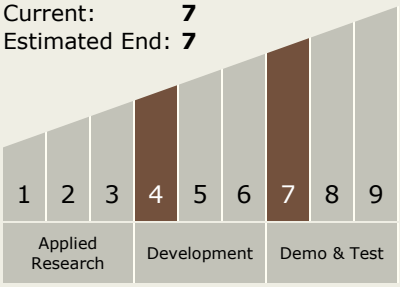
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Ardit Velia

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



3D Flash LIDAR EDL Resolution Improvement, Phase II

Completed Technology Project (2014 - 2017)

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
  - TX09.4 Vehicle Systems
    - TX09.4.7 Guidance, Navigation and Control (GN&C) for EDL

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System